Mahmoud **Ahmed**

POSTDOC · BIOLOGY

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Summary

I use public high-throughput data to learn about the process of autophagy. My research focuses on the gene expression and its regulation in cell and animal models. I also build open source tools for managing data mainly in the form of R packages and shiny applications.

Research Interest

- The changes in Autophagy pathway between normal and cancer cells derived from mouse models and humans
- The regulation of Autophagy genes by the master adipogenic transcription factors during cell differentiation
- Identifying direct gene targets of transcription factors and their potential regulatory functions
- Developing open source data products to disseminate the methods and the findings of my research

Education

Gyeongsang National University   *Jinju, S.Korea*

PhD IN CONVERGENCE MEDICAL SCIENCE   *Mar. 2018 - 2021*

- Thesis: Transcriptional regulation of autophagy during adipocyte differentiation

M.S IN CONVERGENCE MEDICAL SCIENCE   *Sep. 2015 - Feb. 2018*

- Thesis: Systematic characterization of autophagy-related genes during the adipocyte differentiation using public-access data

Cairo University   *Cairo, Egypt*

BACHELOR OF MEDICINE AND SURGERY (MBBCh)   *Sep. 2007 - Nov. 2014*

- Three years of basic medical science courses, three years of clinical rotations, and one year of internship.

Courses

Genomics	Data Analysis for Life Sciences, Genomic Data Science
Statistics & Data Analysis	Data Science, Data Visualization, Machine Learning, Statistics for Medical Research
Programming	Mastering Software Development in R, Learn to Program: The Fundamentals
Academic Writing	Academic English: Writing Specialization, Writing in the Sciences

Skills

Data Processing	Microarrys, RNA-Seq, ChIP-Seq, RTqPCR, Microscopy Images
Data Analysis	Differential Expression & Co-expression, Gene Set enrichment, Network & Image Analyses, Chromatin Segmentation
Programming	R, Python, Bash, LaTeX, Git
Languages	Arabic, English

Awards & Scholarships

2020	**Presenter**, KSBMB, Young Scientist Program	*Virtual, S. Korea*
2018,2019	**Recipient**, Gyeongsang National University. Young Pioneer Researcher Award	*Jinju, S. Korea*
2016-2019	**Recipient**, Brain Korea 21 Plus Scholarship. Master's & PhD Courses	*Jinju, S. Korea*

References

Deok Ryong Kim   PhD . Gyeongsang National University . drkim@gnu.ac.kr
Sang Soo Kang   PhD . Gyeongsang National University . kangss@gnu.ac.kr

Publications

- M. Ahmed and D.R. Kim. *Anti-cancer effect of RKIP via modulating autophagy during metastasis*. 2020. ISBN: 9780128196120
- Mahmoud Ahmed, Do Sik Min, and Deok Ryong Kim. "Curated gene expression dataset of differentiating 3T3-L1 adipocytes under pharmacological and genetic perturbations". In: *Adipocyte* 9.1 (Jan. 2020), pp. 600–608. ISSN: 2162-3945
- Mahmoud Ahmed, Do Sik Min, and Deok Ryong Kim. "Integrating binding and expression data to predict transcription factors combined function". In: *BMC Genomics* 21.1 (Dec. 2020), p. 610. ISSN: 1471-2164
- Mahmoud Ahmed and Deok Ryong Kim. "Modelling the gene expression and the DNA-binding in the 3T3-L1 differentiating adipocytes." In: *Adipocyte* 8.1 (Dec. 2019), pp. 401–411. ISSN: 2162-397X
- Mahmoud Ahmed, Trang Huyen Lai, and Deok Ryong Kim. "colocr: an R package for conducting co-localization analysis on fluorescence microscopy images". In: *PeerJ* 7 (July 2019), e7255. ISSN: 2167-8359
- Mahmoud Ahmed et al. "Transcriptional Regulation of Autophagy Genes via Stage-Specific Activation of CEBPB and PPARG during Adipogenesis: A Systematic Study Using Public Gene Expression and Transcription Factor Binding Datasets". In: *Cells* 8.11 (Oct. 2019), p. 1321. ISSN: 2073-4409
- Mahmoud Ahmed and Deok Ryong Kim. "cRegulome: an R package for accessing microRNA and transcription factor-gene expression correlations in cancer." In: *PeerJ* 7 (2019), e6509. ISSN: 2167-8359
- Mahmoud Ahmed and Deok Ryong Kim. "pcr: an R package for quality assessment, analysis and testing of qPCR data." In: *PeerJ* 6.3 (Mar. 2018), e4473. ISSN: 2167-8359
- Mahmoud Ahmed et al. "Co-Expression network analysis of AMPK and autophagy gene products during adipocyte differentiation". In: *International Journal of Molecular Sciences* 19.6 (June 2018), p. 1808. ISSN: 14220067
- Mahmoud Ahmed et al. "Systematic characterization of autophagy-related genes during the adipocyte differentiation using public-access data". In: *Oncotarget* 9.February (2018). ISSN: 1949-2553
- Mahmoud Ahmed et al. "Functional Linkage of RKIP to the Epithelial to Mesenchymal Transition and Autophagy during the Development of Prostate Cancer". In: *Cancers* 10.8 (Aug. 2018), p. 273. ISSN: 2072-6694
- M. Ahmed et al. "MiRCancerdb: A database for correlation analysis between microRNA and gene expression in cancer". In: *BMC Research Notes* 11.1 (2018). ISSN: 17560500

Talks & Workshops

2021	**EuroBioc**, Integrating ChIP-seq and RNA-seq data in R	*Virtual*
2021	**BioC Asia**, target: An R package to Predict Combined Function of Transcription Factors	*Virtual*
2021	**KSBMB**, Integrating binding and expression data to predict transcription factors combined function	*Virtual*

Integrating binding and expression data to predict transcription factors combined function **Open Source**

- **target**: An R Package to Predict Combined Function of Transcription Factors   (Bioconductor)
- **colocr**: An R package for conducting co-localization analysis.   (ROpenSci/CRAN)
- **colocr_app**: A shiny app for conducting co-localization analysis.   (shinyapps.io)
- **pcr**: Quality assessing, analyzing and testing the statistical significance of real-time quantitative PCR data (CRAN)
- **cRegulome**: An R package to access, manage and visualize regulome (microRNA/transcription factors)-gene correlations in cancer   (ROpenSci/CRAN)
- **miRCancerdb**: A database for microRNA-gene/protein expression correlation in cancer.   (shinyapps.io)
- **cRegulomedb**: Build the database file for cRegulome package.   (GitHub)
- **sqlome**: Build SQLite tables of microRNAs and Transcription Factors-gene Correlations   (GitHub)
- **curatedAdipoArray**: A Curated Microarrays Dataset of MDI-induced Differentiated Adipocytes Under Genetic and Pharmacological Perturbations.   (Bioconductor)
- **curatedAdipoRNA**: A Curated RNA-Seq Dataset of MDI-induced Differentiated Adipocytes.   (Bioconductor)
- **curatedAdipoChIP**: A Curated ChIP-Seq Dataset of MDI-induced Differentiated Adipocytes.   (Bioconductor)
- **apihelpers**: Helper Functions for Making an R Client for an API   (GitHub)
- **biogridapi**: An R client for BIOGRID API   (GitHub)
- **stringapi**: An R client for STRING API   (GitHub)
- **biowareapi**: An R client for bioware API   (GitHub)
- **stitchapi**: An R client for STITCH API (STRING v10)   (GitHub)